PIONEER®

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS

ORDER NO.
ARP-099-0

STEREO TUNER

TX-130L

MODEL TX-130L COMES IN TWO VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
HE	220V and 240V	Europe model
HB	220V and 240V	U.K. model

- **This service manual is applicable to the HE, HB types.**
- **Ce manuel d'instruction se refère au mode de réglage, en francais.**
- **Este manual de servicio trata del método de ajuste escrito en español.**

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Change of Line Voltage

Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the Top cover.
3. Change the connection wire (for power transformer) of terminal No. 12 and terminal No. 11 of Switch assembly A as follows:

Voltage	Terminal No. 12	Terminal No. 11
220V	Green wire	Blue wire
240V	Blue wire	Green wire

4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V label
AAX-192	240V label

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. 1925 E. Dominguez St., Long Beach, California 90810 U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Luithagen-Haven 9, 2030 Antwerp, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia

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1. SPECIFICATIONS

FM Tuner Section

Usable Sensitivity ..... 10.8 dBf (1.9 μV)
50 dB Quieting Sensitivity ..... Mono; 17.3 dBf (4.0 μV)
Stereo; 39.2 dBf (50 μV)
Sensitivity (DIN) ..... Mono; 0.85 μV
Stereo; 39.8 μV
Signal-to-Noise Ratio (at 80 dBf) ..... Mono; 75 dB
Stereo; 70 dB
Signal-to-Noise Ratio (DIN) ..... Mono; 72 dB
Stereo; 70 dB
Distortion (at 60 dBf)
Stereo ..... 1 kHz; 0.2%
Distortion (DIN)
Stereo ..... 1 kHz, 0.2%
Capture Ratio ..... 1.0 dB
Alternate Channel Selectivity ..... 60 dB
Stereo Separation ..... 1 kHz; 40 dB
Frequency Response ..... 30 Hz to 15 kHz $^{+0.2}_{-1.0}$ dB
Spurious Response Ratio ..... 70 dB
Image Response Ratio ..... 55 dB
IF Response Ratio ..... 80 dB
AM Suppression Ratio ..... 50 dB
Muting Threshold ..... 19.2 dBf (5 μV)
Antenna Input ..... 300 ohms balanced, 75 ohms unbalanced

LW Tuner Section

Sensitivity
IHF, external antenna ..... 45 μV
Selectivity ..... 25 dB
Signal-to-Noise Ratio ..... 50 dB
Image Response Ratio ..... 40 dB
IF Response Ratio ..... 70 dB
Antenna ..... Accessory AM loop antenna

MW Tuner Section

Sensitivity
IHF, external antenna ..... 30 μV
Selectivity ..... 25 dB
Signal-to-Noise Ratio ..... 50 dB
Image Response Ratio ..... 40 dB
IF Response Ratio ..... 70 dB
Antenna ..... Accessory AM loop antenna

Audio Section

FM (100% MOD) ..... 650 mV/3.5 kΩ
AM (30% MOD) ..... 200 mV/3.5 kΩ

Miscellaneous

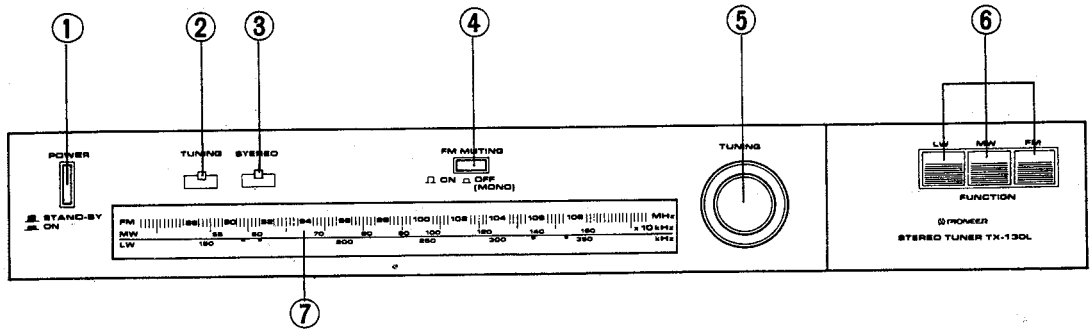
Power Requirements AC220V/240V, 50/60Hz
(Switchable)
Power Consumption ..... 9.5 W
Dimensions ..... 420 (W) x 69 (H) x 226 (D) mm
16-1/2 (W) x 2-3/4 (H) x 8-7/8 (D) in
Weight (without package) ..... 2.5 kg (5 lb 8 oz)

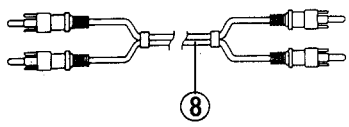
Furnished Parts

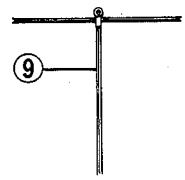
FM T-type Antenna 1
AM Antenna 1
Antenna Catcher 1
Connection Cord with Pin Plugs 1
Operating Instructions 1

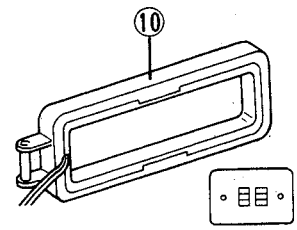
NOTE:
Specifications and design subject to possible modification without notice.

2. FRONT PANEL FACILITIES









① POWER SWITCH (POWER)

When this switch is set to the ON position, power is supplied to the tuner's main circuits. The unit's power switch is geared to selecting the transformer's secondary and so even at the STAND-BY position, the unit's circuitry will work as long as the power cord is connected to the power outlet. Disconnect the power cord from the AC power outlet when the unit is not in regular use.

② TUNING INDICATOR (TUNING)

This indicates that an FM, MW or LW broadcasting station is being received.

③ STEREO INDICATOR (STEREO)

This lights automatically when an FM program is being broadcast in stereo.

It does not light when the FM MUTING switch has been set to the OFF/MONO position.

④ FM MUTING SWITCH (FM MUTING)

In the released position when it is normally set, this switch suppresses the annoying interstation noise which is heard when tuning in FM broadcasting stations.
If the station signals are weak and there is a great deal of noise and distortion, depress this switch (and monaural sound reproduction results).

This switch does not work with MW and LW reception.

⑤ TUNING KNOB

Rotate this knob to pick up the stations (FM, MW or LW).

⑥ FUNCTION SWITCHES (FM, MW or LW)

Depress the FM switch for listening to FM broadcasts.
Depress the MW switch for listening to MW broadcasts.
Depress the LW switch for listening to LW broadcasts.

⑦ FREQUENCY SCALE

This indicates the frequency of the broadcasting station (FM, MW and LW).
The top level figures (88~108) indicate the FM frequencies.
The center level figures (55~160) indicate the MW frequencies.
The bottom level figures (150~350) indicate the LW frequencies.

⑧ OUTPUT CORD (accessory)

This is used to hook the unit up with the stereo amplifier.

⑨ T-TYPE FM ANTENNA (accessory)

This antenna is for listening to FM stations and it should be connected to the rear panel of the unit.

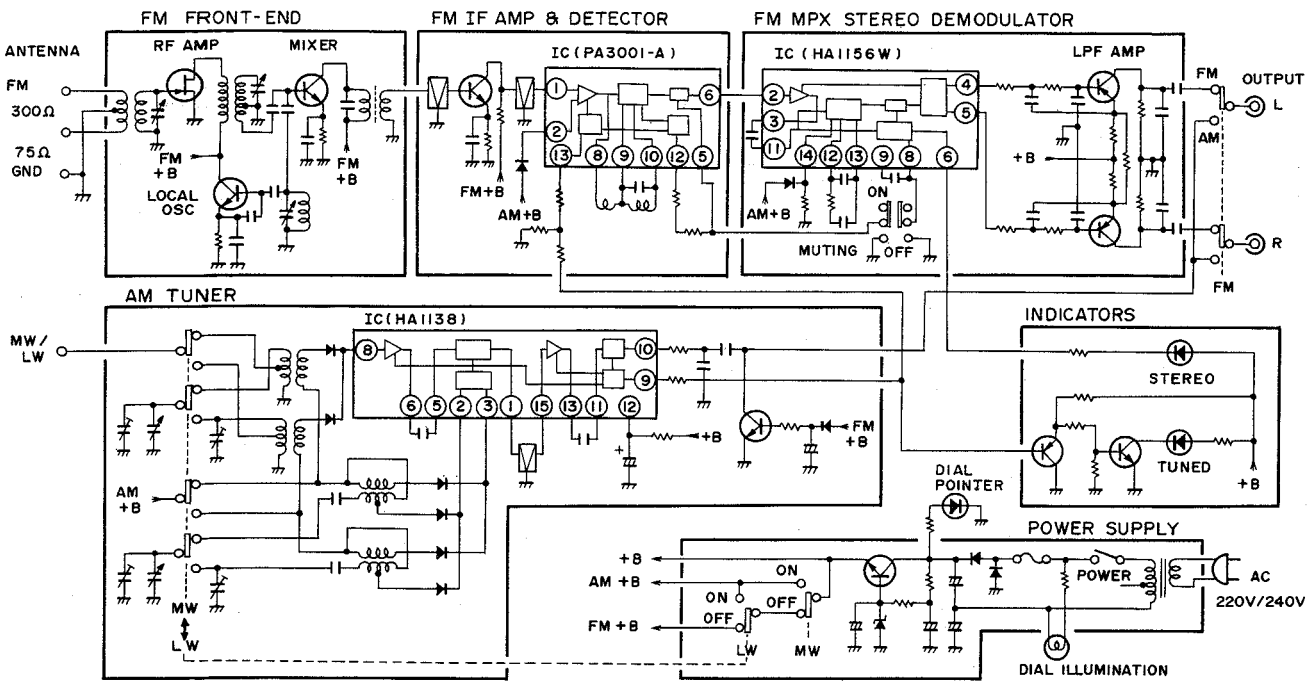
This is a spare antenna for listening to FM stations and is used until an outdoor FM antenna is erected. For the best reception, an outdoor antenna should be obtained.

⑩ AM ANTENNA AND ANTENNA CATCHER (accessory)

This antenna is for listening to MW and LW stations and it should be connected to the rear panel of the unit. The antenna catcher is used when fixing the antenna to a wall or other location.

NOTE:
Even with the accessory T-type FM antenna and AM antenna it may be impossible to tune into some stations when the broadcast stations are too far away or when the unit is located in a weak-signal area such as in the mountains. In cases like this, use an external antenna.

3. BLOCK DIAGRAM



4. CIRCUIT DESCRIPTIONS

FM Tuner

The FM front end is comprized of a J-FET (2SK168) single-stage RF amplifier, and NPN transistor mixer, and an NPN transistor modified Clapp local oscillator.

The IF stage consists of 2 dual-element ceramic filters, a single transistor amplifier element, and IF system IC (PA3001-A) which incorporates the IF limiter amplifier, FM detector, and the FM muting circuit.

FM Multiplex Stereo Decoder

The stereo decoder stage employs an FM MPX IC (HA1156W-P), while the subcarrier signals (frequencies above 19kHz) are removed by an -18dB/oct. active filter consisting of a PNP transistor. This active filter also serves as an amplifier for frequencies within its passband, and eliminates crosstalk.

AM Tuner

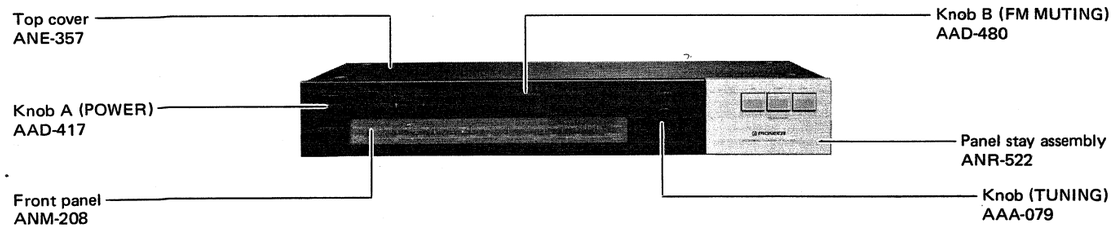
The AM tuner is two wave-band tuner with LW (150kHz~350kHz) and MW (525kHz~1605kHz). This employs a 2-ganged tuning capacitor, a single element ceramic filter, and an IC (HA1138) consisting of an RF amplifier, mixer, 2-stage IF amplifier, detector and AGC circuit.

5. PARTS LOCATION

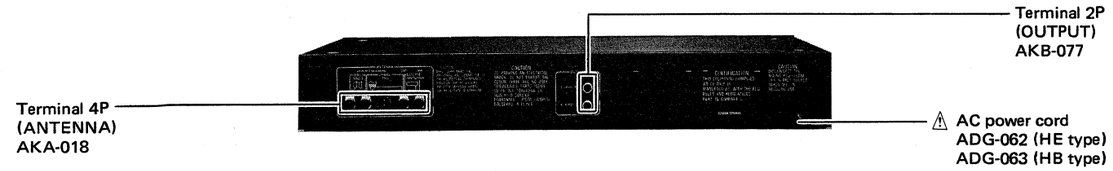
NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ *GENERALLY MOVES FASTER THAN* ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

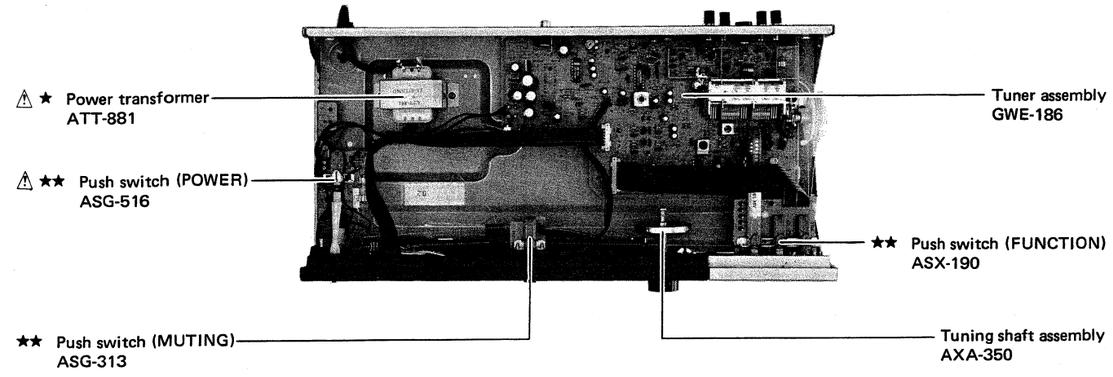
Front Panel View



Rear Panel View



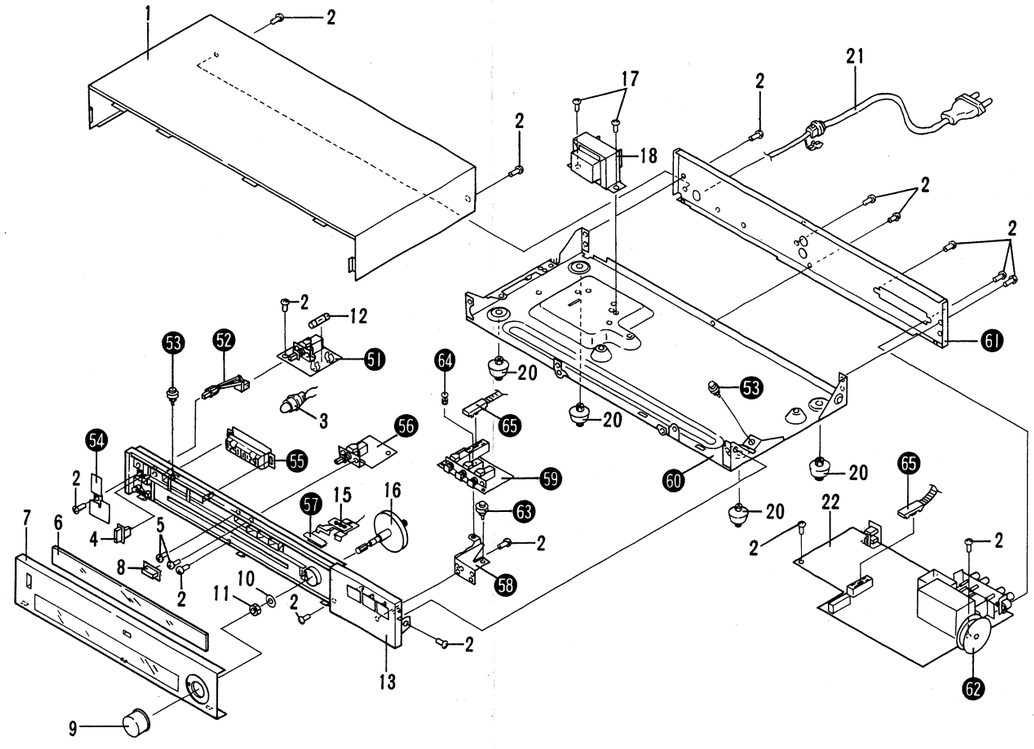
Top View



6. EXPLODED VIEW

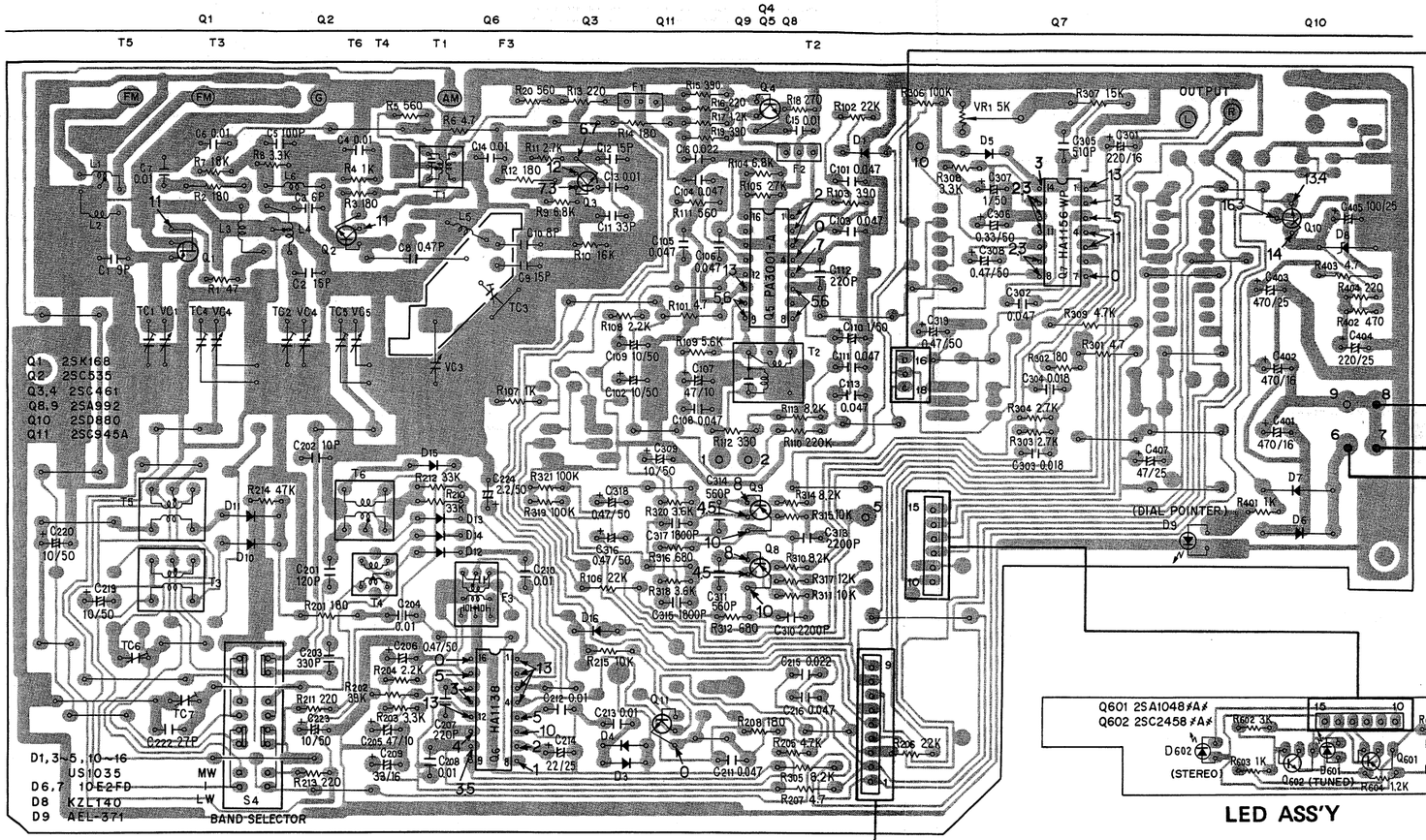
Mark	No.	Part No.	Description
	1.	ANE-357	Top cover
	2.	BBZ30P080FZK	Screw 3x8
★	3.	AEL-165	Lamp assembly
	4.	AAD-417	Knob A (POWER)
	5.	PMZ30P060FMC	Screw 3x6
	6.	AAG-237	Dial scale
	7.	ANM-208	Front panel
	8.	AAD-480	Knob B (FM MUTING)
	9.	AAA-079	Knob (TUNING)
	10.	WA73F118U050	Washer
	11.	ABN-067	Nut M7
⚠ ★★	12.	AEK-406	Fuse (T630mA)
	13.	ANR-522	Panel stay assembly
	14.	.....	
	15.	AAF-117	Dial pointer assembly
	16.	AXA-350	Tuning shaft assembly
	17.	ABA-252	Screw
⚠ ★	18.	ATT-881	Power transformer
	19.	.....	
	20.	AEC-784	Foot assembly

Mark	No.	Part No.	Description
⚠	21.	ADG-062	AC power cord (HE type)
		ADG-063	AC power cord (HB type)
	22.	GWE-186	Tuner assembly
	51.		Switch assembly A
	52.		Switch joint
	53.		Pulley assembly
	54.		Plate
	55.		LED assembly
	56.		Switch assembly B
	57.		Smoother
	58.		Pulley holder
	59.		Switch assembly C
	60.		Chassis
	61.		Rear panel
	62.		Tuning drum
	63.		Pulley assembly
	64.		Nylon rivet
	65.		Remote wire

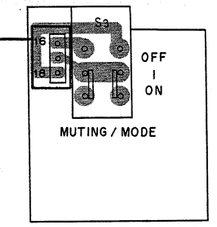


7. P.C. BOARD CONNECTION DIAGRAM

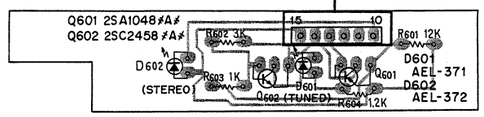
TUNER ASS'Y GWE-186



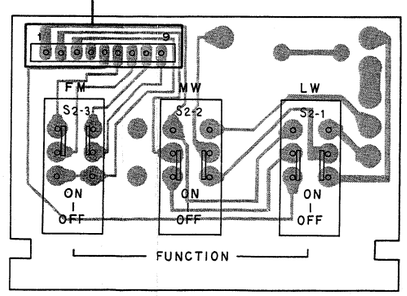
SWITCH ASS'Y (B)



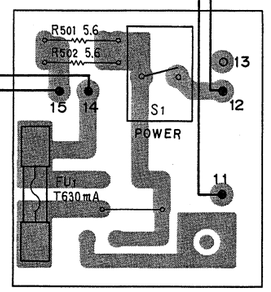
LED ASS'Y



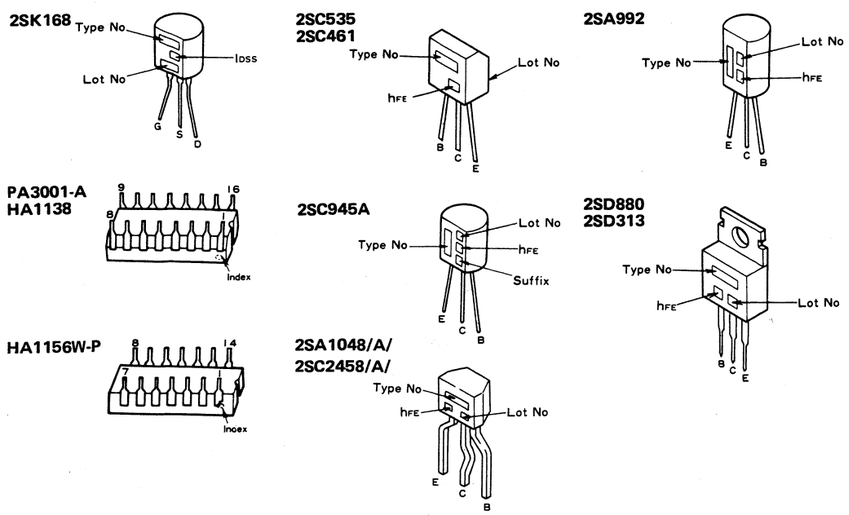
SWITCH ASS'Y (C)



SWITCH ASS'Y (A)

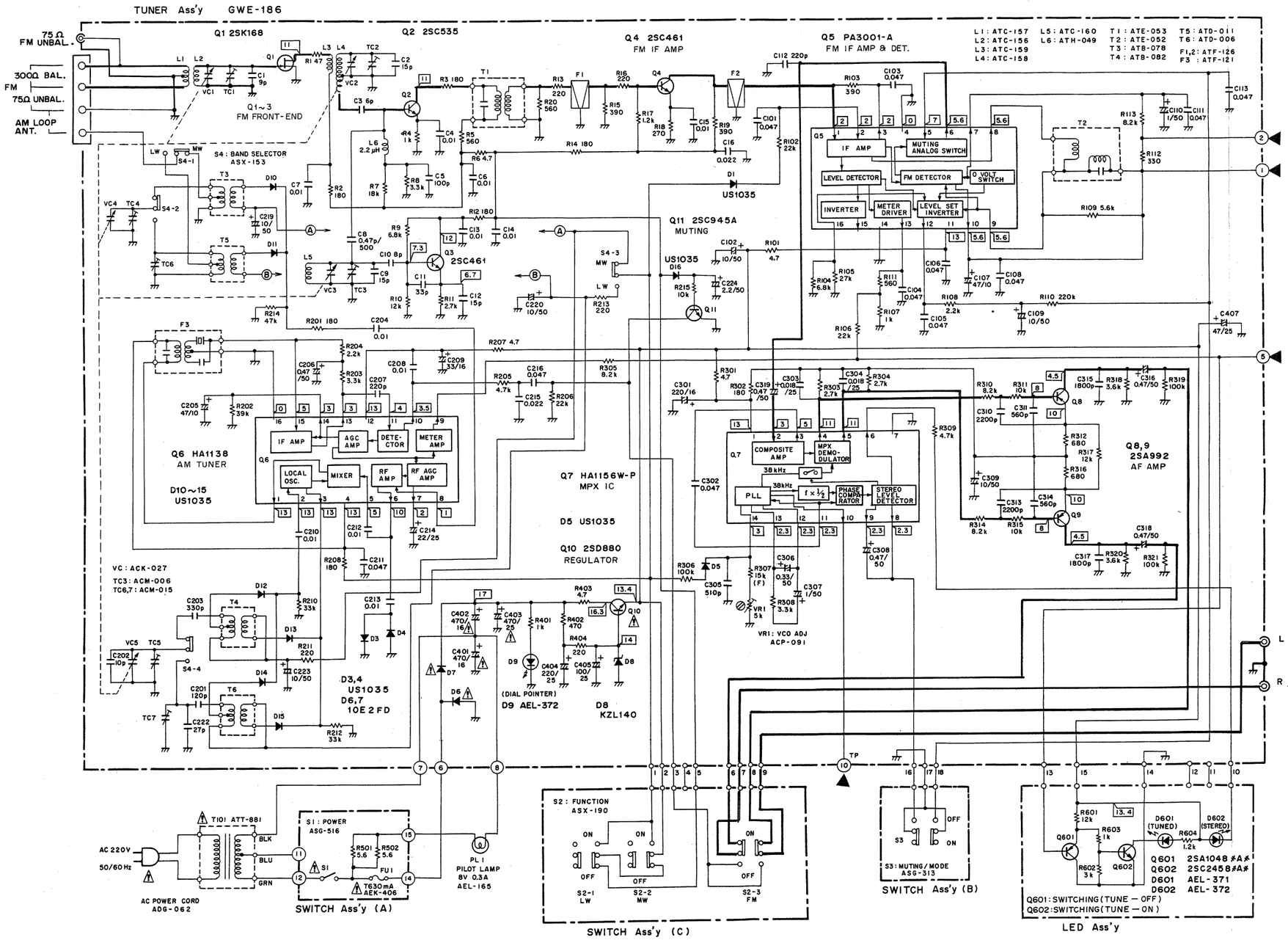


External Appearance of Transistors and ICs



8. SCHEMATIC DIAGRAM

NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.



1. RESISTORS:
Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10%, (M) : ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE
: DC voltage (V) at no input signal
mV: Signal voltage at FM 400Hz 75kHz DEV.

4. OTHERS:
⊘ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

S1	: POWER		ON — OFF
S2-1	: FUNCTION	LW	ON — OFF
S2-2	: FUNCTION	MW	ON — OFF
S2-3	: FUNCTION	FM	ON — OFF
S3	: MUTING / MODE		ON/AUTO — OFF/MONO
S4	: BAND SELECTOR		LW — MW

The underlined indicates the switch position.

9. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 x 10¹*	*561*	*RD¼PS 561J*
47kΩ	*47 x 10³*	*473*	*RD¼PS 473J*
0.5Ω	*0R5*		*RN2H 0R5K*
1Ω	*010*		*RS1P 010K*

  Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 x 100*	*5621*	*RN¼SR 5621F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number , temperature, humidity, etc.

Miscellaneous Parts

Mark	Part No.	Symbol & Description	
	GWE-186		Tuner assembly
⚠ ★	ATT-881	T101	Power transformer
★	AEL-165	PL1	Lamp assembly
⚠ ★★	AEK-406	FU1	Fuse (T630mA)
⚠	ADG-062		AC power cord (HE type)
⚠	ADG-063		AC power cord (HB type)

Tuner Assembly (GWE-186)

CAPACITORS

Mark	Part No.	Symbol & Description	
	ACK-027	VC	Tuning capacitor
	ACM-006	TC3	Ceramic trimmer
	ACM-015	TC6,TC7	Ceramic trimmer
	CGB R47K 500	C8	
	CCDCH 080D 50	C10	
	CCDRH 150J 50	C9	
	CCDTH 100D 50	C202	
	CCDCH 150J 50	C12	
	CCDUJ 090D 50	C1	
	CCDUJ 150J 50	C2	
	CCDSH 270J 50	C222	
	CCDCH 330J 50	C11	
	CCDSL 060D 50	C3	
	CCDSL 101J 50	C5	
	CCDSL 221J 50	C112, C207	
	CKDYB 561K 50	C311, C314	
	CKDYB 182K 50	C315, C317	
	CKDYB 222K 50	C310, C313	
	CKDYX 183M 25	C303, C304	
	CKDYF 103Z 50	C4, C6, C7, C13—C15, C204, C208, C210, C212, C213	
	CKDYF 473Z 50	C101, C103—C106, C108, C111, C113, C216, C302, C211	
	CKDYF 223Z 50	C16, C215	
	CEA 471M 16L	C401, C402	
	CEA 471M 25L	C403	
	CEA 221M 25L	C404	
	CEA R33M 50L	C306	
	CEA R47M 50L	C206, C308, C316, C318, C319	
	CEA 010M 50L	C110, C307	
	CEA 100M 50L	C102, C219, C220, C223, C309, C109	
	CEA 220M 25L	C214	
	CEA 330M 16L	C209	
	CEA 470M 10L	C107, C205	
	CEA 470M 25L	C407	
	CEA 101M 25L	C405	
	CEA 221M 16L	C301	
	CEA 2R2M 50L	C224	
	CQSA 331K 50	C203	
	CQSA 511J 50	C305	
	CQSA 121K 50	C201	

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Part No.	Symbol & Description
★	ACP-091	VR1 Semifixed (5k)
	RN¼PQ 1502F	R307
	RD¼PM □□□J	R2, R6, R12, R14, R101, R207, R301, R403
	RD1/8PM □□□J	R1, R3—R5, R7—R11, R13, R15—R20, R102—R113, R201—R206, R208, R210—R215, R302—R306, R308—R312, R314—R321, R401, R402, R404

SEMICONDUCTORS

Mark	Part No.	Symbol & Description	
★★	2SK168	Q1	
★★	2SC535	Q2	
★★	2SC461	Q3, Q4	
★★	PA3001-A	Q5	
★★	HA1156W-P	Q7	
★★	HA1138	Q6	
★★	2SA992	Q8, Q9	
★★	2SC945A	Q11	
★★	2SC880	Q10	
★★	(2SD313)		
★	US1035 (1S2473) (1S1555)	D1, D3—D5, D10—D16	
⚠ ★	10E2FD	D6, D7	
★	KZL140	D8	
★	AEL-372	D9	LED

COILS, FILTERS

Mark	Part No.	Symbol & Description	
	ATC-157	L1	FM ANT coil
	ATC-156	L2	FM ANT coil
	ATC-159	L3	RF coil
	ATC-158	L4	RF coil
	ATC-160	L5	FM OSC coil
	ATH-049	L6	RF choke coil
	ATE-053	T1	FM IF transformer
	ATE-052	T2	FM det. transformer
	ATB-078	T3	AM ANT coil
	ATB-082	T4	AM OSC coil
	ATD-011	T5	LW ANT coil
	ATD-006	T6	LW OSC coil
	ATF-126	F1, F2	FM ceramic filter
	ATF-121 (ATF-133)	F3	AM ceramic filter

OTHERS

Mark	Part No.	Symbol & Description	
	AKA-018		4P terminal (ANTENNA)
	AKB-077		2P terminal (OUTPUT)
★★	ASX-153	S4	Remote slide switch

Switch Assembly A

Mark	Part No.	Symbol & Description	
⚠ ★★	ASG-516	S1	Push switch (POWER)
	RD¼PM 5R6J	R501, R502	

Switch Assembly B

Mark	Part No.	Symbol & Description	
★★	ASG-313	S3	Push switch (FM MUTING)

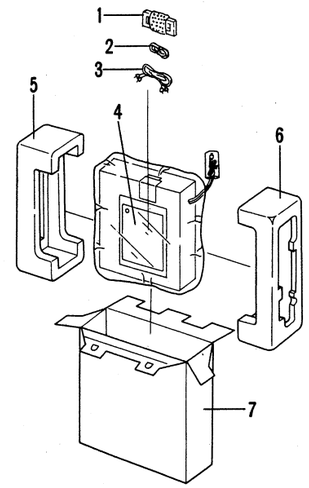
Switch Assembly C

Mark	Part No.	Symbol & Description
★★	ASX-190	Remote push switch (FUNCTION)

LED Assembly

Mark	Part No.	Symbol & Description	
★★	2SA1048/A/	Q601	
★★	2SC2458/A/	Q602	
★	AEL-371	D601	LED
★	AEL-372	D602	LED
	RD1/8PM □□□J	R601—R604	

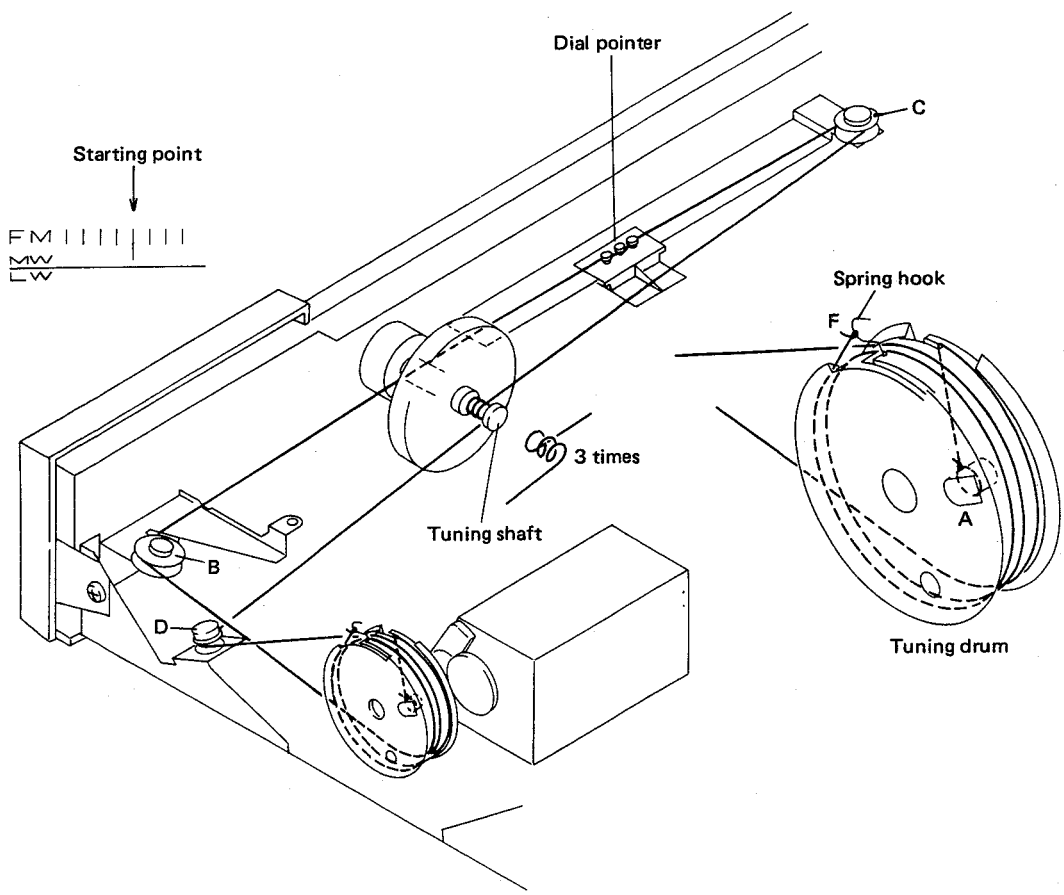
10. PACKING



Mark	No.	Part No.	Description
	1.	ATB-076	Antenna assembly
	2.	ADH-004	T-type FM antenna
	3.	ADE-015	Cord
	4.	ARE-033	Operating instructions (HE) (English/German/French/Italian)
		ARB-486	Operating instructions (HB) (English)
	5.	AHA-296	Front pad
	6.	AHA-297	Rear pad
	7.	AHE-042	Packing case

11. DIAL CORD STRINGING

1. Remove the top cover.
2. Remove the tuning drum from the shaft of the tuning capacitor.
3. Tie one end of the cord to the stud A located inside the tuning drum.
4. Rotate the tuning capacitor right around until the rotor blades are fully intermeshed.
5. Secure the tuning drum back onto the tuning capacitor shaft, making sure that the securing screw faces directly upward.
6. Pass the cord out through the small opening in the circumference of the tuning drum (see diagram), and then take it over pulleys B and C in that sequence.
7. Wind the cord around the tuning shaft 3 times.
8. Pass it over pulley D, wind it around the tuning drum 2 times, and finally tie it to the spring hook F so that it is tensioned.
9. Turn the tuning shaft, and check that the cord moves smoothly.
10. Cut off any excess cord.
11. Turn the tuning shaft counter-clockwise as far as it will go.
12. Align the dial pointer with the starting point of the dial scale, and then pass the cord over it.
13. Check that the dial pointer is in line with the starting point of the dial scale.
14. Finally apply the locking paint to the cord securing positions (stud A and spring hook F) and the dial pointer connection.



12. ADJUSTMENTS

FM Tuner Section

- Check that the dial pointer indicates a starting point.
- Connect the SIGNAL meter between terminal no. 5 of tuner ass'y and the ground.
- Connect the TUNING meter between terminals no. 1 and no. 2 of tuner ass'y.
- Set the FM switch to ON and the FM MUTING switch to OFF.

Step	FM SG (400Hz, ±75kHz deviation)		Position of dial pointer	Adjustment point	Adjustment procedure
	Frequency	Level			
1	106MHz	106dB	106MHz	TC3	Set the TUNING meter to the center position and the SIGNAL meter to the maximum value.
2	90MHz	106dB	90MHz	VC3 (Fig. 12-1)	
3	Repeat steps 1 to 2.				
4	98MHz	18dB	98MHz	TC1 TC2, T1	Set the SIGNAL meter to the maximum value.
5	No signal		White noise	T2	Set the TUNING meter to the center position.
6	Turn ON the FM MUTING switch.				
7	98MHz	25~35dB Variable	98MHz	R104	Remove R104 when muting operation stops above 30dB.
8	98MHz Not modulated	86dB	98MHz	VR1	Set the signal of the terminal no. 10 to 19kHz (±100Hz).
9	98MHz Stereo modulation	86dB	98MHz	T1 (within ±90°)	Minimize the distortion of the OUTPUT terminal signal.

NOTE:

Connect the MPX SG to the FM SG external modulator terminal and set the modulation to Main (1kHz, L+R) ±67.5kHz deviation, Pilot (19kHz) ±7.5kHz deviation.

AM Tuner Section

- Check that the dial pointer indicates a starting point.
- Turn ON the MW switch.
- Connect the SIGNAL meter between the terminal no. 5 of tuner ass'y and the ground.

Step	AM SG (400Hz, 30% modulation)		Position of dial pointer	Adjustment point	Adjustment procedure
	Frequency	Level			
1	1400kHz	100dB	1400kHz	TC5	Set the output of the OUTPUT terminal to the maximum value.
2	600kHz	100dB	600kHz	T4	
3	Repeat steps 1 to 2.				
4	1400kHz	30dB	1400kHz	TC4	
5	600kHz	30dB	600kHz	T3	
6	Repeat steps 4 to 5.				

Long Wave Section

- Set the AM BAND switch to the LW position.

Step	AM SG (400Hz, 30% modulation)		Position of dial pointer	Adjustment point	Adjustment procedure
	Frequency	Level			
1	340kHz	100dB	340kHz	TC6	Adjust until demodulated signal at OUTPUT terminal is maximum.
2	160kHz	100dB	160kHz	T5	
3	Set the AM SG to 30dB output level, repeat steps 1 to 2 above.				
4	340kHz	50dB	340kHz	TC7	Adjust until demodulated signal at OUTPUT terminal is maximum.
5	160kHz	50dB	160kHz	T6	
6	Repeat steps 4 to 5 until maximum sensitivity is attained.				

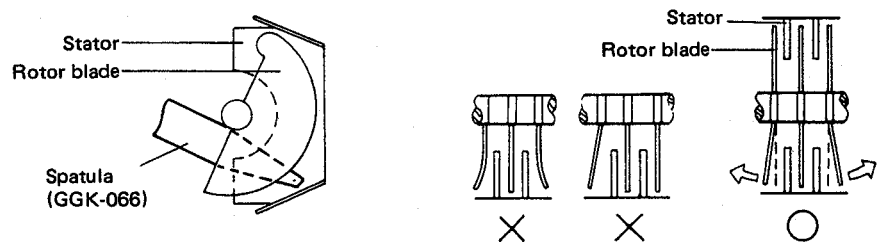


Fig. 12-1 Adjustment of tuning capacitor

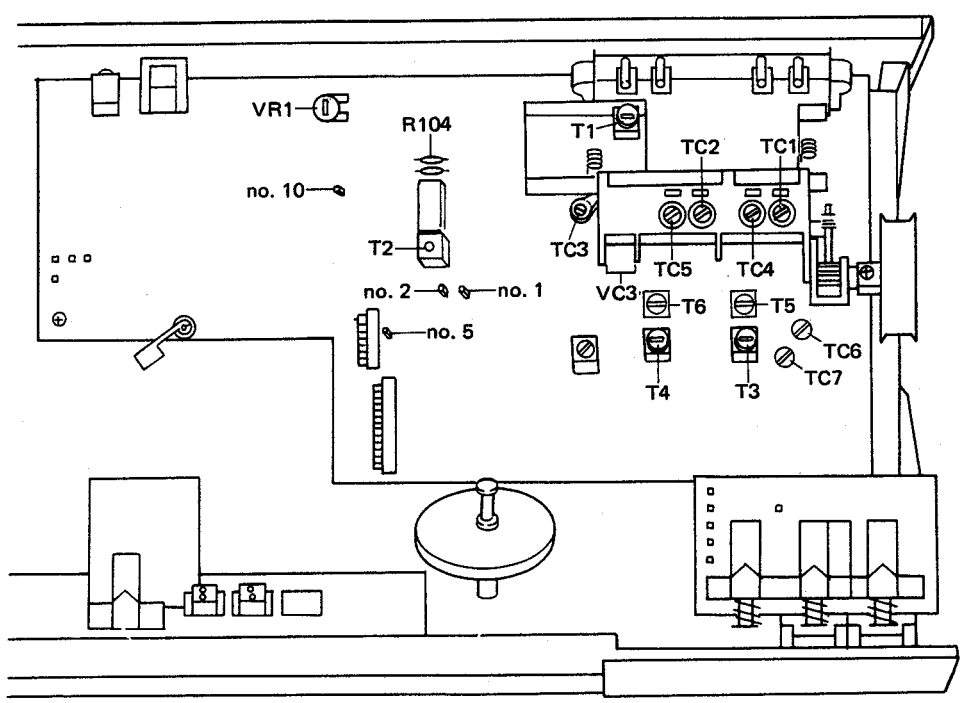


Fig. 12-2 Adjustment points

12. RÉGLAGE

Section tuner FM

- Vérifier que l'aiguille se trouve sur la position de départ.
- Brancher le S-mètre (SIGNAL) entre la borne n° 5 du tuner et la masse.
- Brancher l'indicateur d'accord (TUNING) entre la borne n° 1 et la borne n° 2 du tuner.
- Déplacer l'interrupteur FM sur la position ON, et le sélecteur de réglage silencieux FM (FM MUTING) sur la position OFF.

Etape	FM SG (400Hz, déviation±75kHz)		Position de l'aiguille	Point de réglage	Procédure de réglage
	Fréquence	Niveau			
1	106MHz	106dB	106MHz	TC3	Déplacer l'indicateur d'accord sur la position centrale et régler le S-mètre (SIGNAL) à sa valeur maximum.
2	90MHz	106dB	90MHz	VC3 (Fig. 12-1)	
3	Répéter les étapes 1 et 2.				
4	98MHz	18dB	98MHz	TC1 TC2, T1	Régler le S-mètre (SIGNAL) à sa valeur maximum.
5	Pas de signal		Bruit blanc	T2	Déplacer l'indicateur d'accord sur la position centrale.
6	Déplacer le sélecteur de réglage silencieux FM (FM MUTING) sur la position ON.				
7	98MHz	25~35dB Variable	98MHz	R104	Enlever le R104 lorsque le réglage silencieux atteint 30dB.
8	98MHz N'est pas modulé	86dB	98MHz	VR1	Régler le signal de la borne n° 10 à 19kHz (±100Hz).
9	98MHz Modulation stéréo	86dB	98MHz	T1 (entre ±90°)	Régler au minimum la distortion du signal de la borne de sortie (OUTPUT).

NOTE:
Connecter le MPX SG à la borne du modulateur extérieur FM SG et régler la modulation Main (principale) su une déviation de (1kHz, L+R) ±7,5kHz.

Section tuner AM

- Vérifier que l'aiguille se trouve sur la position de départ.
- Déplacer l'interrupteur MW sur la position ON.
- Brancher le S-mètre (SIGNAL) entre la borne n° 5 du tuner et la masse.

Etape	AM SG (400Hz, modulation de 30%)		Position de l'aiguille	Point de réglage	Procédure de réglage
	Fréquence	Niveau			
1	1400kHz	100dB	1400kHz	TC5	Régler la sortie de la borne de sortie (OUTPUT) à sa valeur maximum.
2	600kHz	100dB	600kHz	T4	
3	Répéter les étapes 1 et 2.				
4	1400kHz	30dB	1400kHz	TC4	
5	600kHz	30dB	600kHz	T3	
6	Répéter les étapes 4 et 5.				

Section grandes ondes

- Déplacer le sélecteur de gammes d'ondes sur la position LW (grandes ondes).

Etape	AM SG (400Hz, modulation de 30%)		Position de l'aiguille	Point de réglage	Procédure de réglage
	Fréquence	Niveau			
1	340kHz	100dB	340kHz	TC6	Régler jusqu'à ce que le signal de démodulation à la borne de sortie (OUTPUT) soit au maximum.
2	160kHz	100dB	160kHz	T5	
3	Régler le signal AM (AM SG) à un niveau de sortie de 30dB, puis, répéter les étapes 1 et 2 ci-dessus.				
4	160kHz	50dB	160kHz	TC7	Régler jusqu'à ce que le signal démodulé à la borne de sortie (OUTPUT) soit au maximum.
5	160kHz	50dB	160kHz	T6	
6	Répéter les étapes 4 er 5 jusqu'au point d'intensité maximum.				

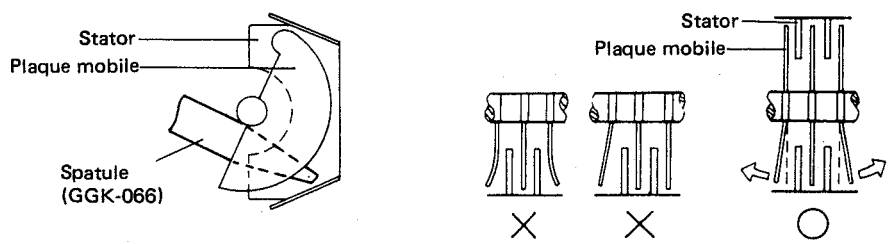


Fig. 12-1 Réglage du capaciteur de syntonisation

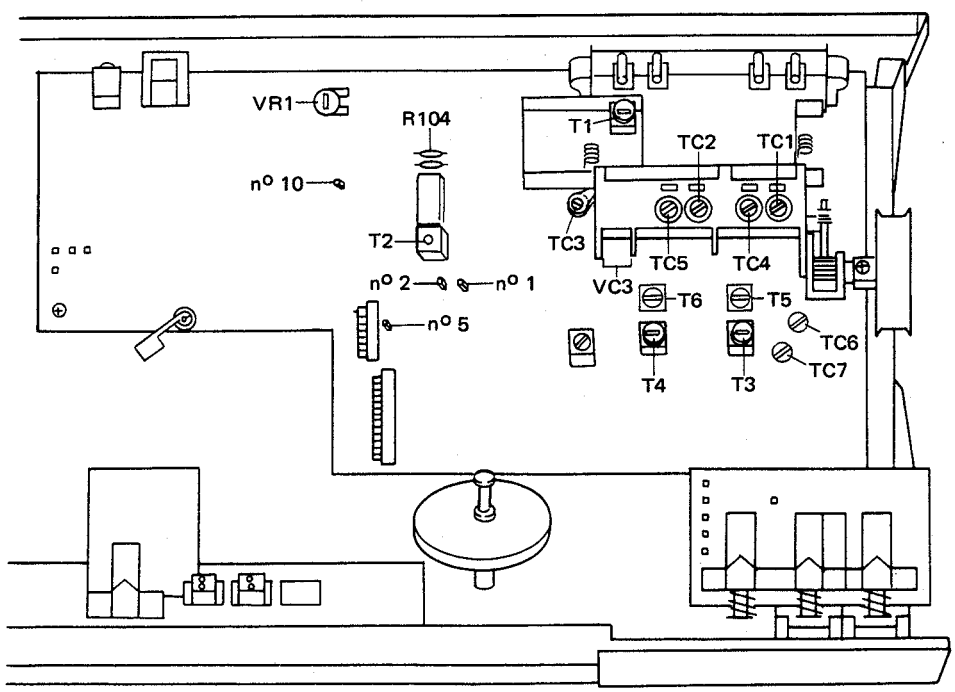


Fig. 12-2 Points de réglage

12. AJUSTE

Sección del sintonizador de FM

- Comprobar que el indicador del cuadrante señala un punto de inicio.
- Conectar el medidor de señal (SIGNAL) entre el terminal no. 5 del conjunto del sintonizador y tierra.
- Conectar el medidor de sintonización (TUNING) entre los terminales no. 1 y 2 del conjunto del sintonizador.
- Poner el selector de FM en la posición ON y el interruptor de silenciamiento en FM (FM MUTING) en la posición OFF.

Paso	FM SG (400Hz, ±75kHz de desviación)		Posición del indicador del cuadrante	Punto de ajuste	Procedimiento de ajuste
	Frecuencia	Nivel			
1	106MHz	106dB	106MHz	TC3	Poner el medidor de sintonización (TUNING) en la posición central y el medidor de señal (SIGNAL) en el valor máximo.
2	90MHz	106dB	90MHz	VC3 (Fig. 12-1)	
3	Repetir los pasos 1 al 2.				
4	98MHz	18dB	98MHz	TC1, TC2, T1	Ajustar el medidor de señal (SIGNAL) al valor máximo.
5	No hay señal		Ruido blanco	T2	Poner el medidor de sintonización (TUNING) en la posición central.
6	Poner en la posición ON el interruptor de silenciamiento en FM (FM MUTING).				
7	98MHz	25~35dB Variable	98MHz	R104	Extraer el R104 cuando la operación de silenciamiento se detiene por encima de los 30dB.
8	98MHz no modulada	86dB	98MHz	VR1	Ajustar la señal del terminal no. 10 a 19kHz (±100Hz).
9	98MHz Modulación estereofónica	86dB	98MHz	T1 (dentro de ±90°)	Minimizar la distorsión de la señal del terminal de salida (OUTPUT).

NOTA:
Conectar el generador de señal de multiplex (MPX SG) al terminal de modulador exterior del generador de señal de FM (FM SG) y ajustar la modulación a Principal (1kHz, Izq.±Der.) ±67,5kHz de desviación.

Sección del sintonizador de AM

- Comprobar que el indicador del cuadrante señale un punto de inicio.
- Poner en la posición ON el selector de MW.
- Connectar el medidor de señal (SIGNAL) entre el terminal no. 5 del conjunto del sintonizador y tierra.

Paso	AM SG (400Hz, 30% de modulación)		Posición del indicador del cuadrante	Punto de ajuste	Procedimiento de ajuste
	Frecuencia	Nivel			
1	1400kHz	100dB	1400kHz	TC5	Ajustar la salida del terminal de salida (OUTPUT) al valor máximo.
2	600kHz	100dB	600kHz	T4	
3	Repetir los pasos 1 y 2.				
4	1400kHz	30dB	1400kHz	TC4	
5	600kHz	30dB	600kHz	T3	
6	Repetir los pasos 4 y 5.				

Sección de onda larga

- Poner el selector de banda de AM (AM BAND) en la posición LW.

Paso	AM SG (400Hz, 30% de modulación)		Posición del indicador del cuadrante	Punto de ajuste	Procedimiento de ajuste
	Frecuencia	Nivel			
1	340kHz	100dB	340kHz	TC6	Ajustar hasta que la señal demodulada en el terminal de salida (OUTPUT) sea la máxima.
2	160kHz	100dB	160kHz	T5	
3	Ajustar el generador de señales de AM (AM SG) al nivel de salida de 30dB, y repetir los pasos 1 y 2 de arriba.				
4	340kHz	50dB	340kHz	TC7	Ajustar hasta que la señal demodulada en el terminal de salida (OUTPUT) sea la máxima.
5	160kHz	50dB	160kHz	T6	
6	Repetir los pasos 4 y 5 hasta que se logre la máxima sensibilidad.				

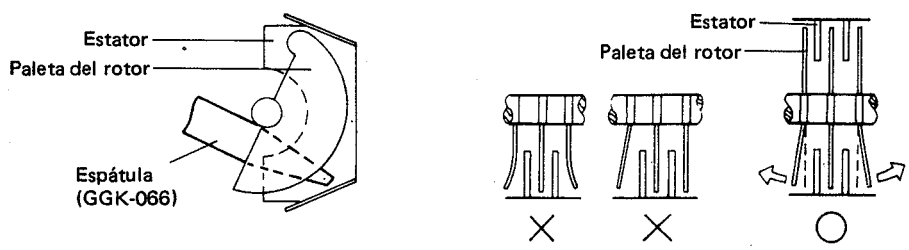


Fig. 12-1 Ajuste del capacitor de sintonización

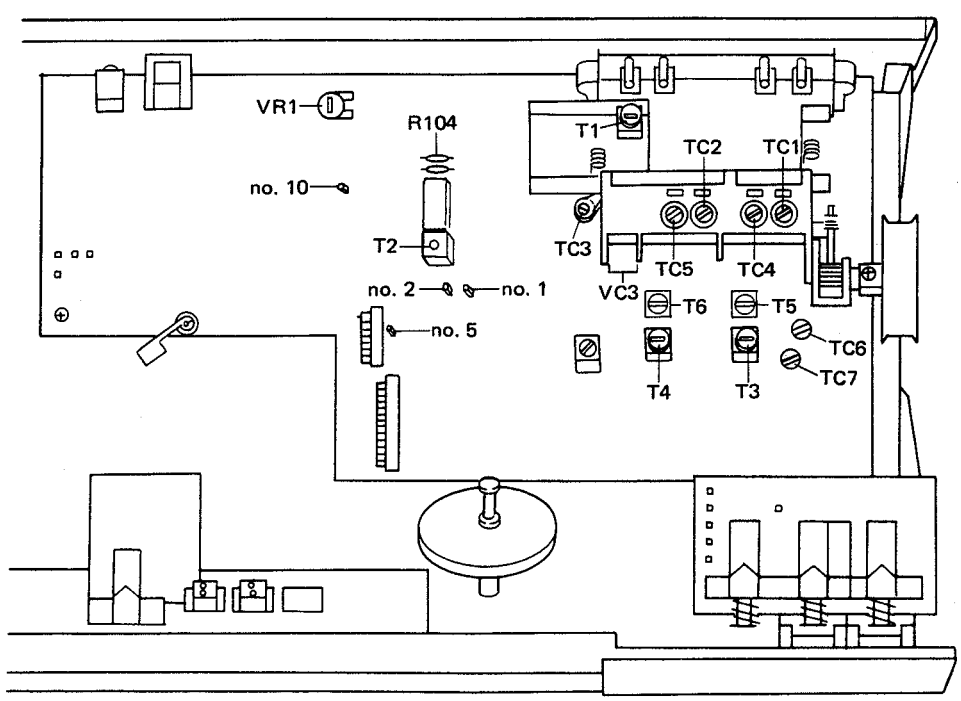


Fig. 12-2 Puntos de ajuste